

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (currently amended) A cathode composition for a lithium-ion battery having the formula  $\text{Li}[\text{M}^1_{(1-x)}\text{Mn}_x]\text{O}_2$  where (a) [[0]]  $0.083 < x < 0.5$  or (b)  $0.5 < x < 1$ , and  $\text{M}^1$  represents one or more metal elements, with the proviso that (i)  $\text{M}^1$  includes nickel, (ii)  $\text{M}^1$  is a metal element other than chromium, and (iii) when  $\text{M}^1$  includes nickel, cobalt, or a combination thereof, all of the nickel has an oxidation state of +2 in air, all of the cobalt has an oxidation state of +3 in air, and all of the manganese has an oxidation state of +4 in air,

    said composition characterized as being in the form of a single phase having an  $\text{O}_3$  crystal structure that does not undergo a phase transformation to a spinel crystal structure when incorporated in a lithium-ion battery and cycled for 100 full charge-discharge cycles at  $30^\circ\text{C}$  and a final capacity of 130 mAh/g using a discharge current of 30 mA/g.

2. (currently amended) A cathode composition according to claim 1 wherein  $\text{M}^1$  [[is]] further includes an element selected from the group consisting of [[Ni]]Co, Fe, Cu, Li, Zn, V, and combinations thereof.

3. (currently amended) A cathode composition according to claim 1 wherein  $x = (2-y)/3$  and  $\text{M}^1_{(1-x)}$  has the formula  $\text{Li}_{(1-2y)/3}\text{M}^2_y$ , where [[0]]  $0.083 < y < 0.5$  and  $\text{M}^2$  represents one or more metal elements, with the proviso that (i)  $\text{M}^2$  includes nickel, (ii)  $\text{M}^2$  is a metal element other than chromium, and (iii) when  $\text{M}^2$  includes nickel, cobalt, or a combination thereof, all of the nickel has an oxidation state of +2 in air, all of the cobalt has an oxidation state of +3 in air, and all of the manganese has an oxidation state of +4 in air,

    said cathode composition having the formula  $\text{Li}[\text{Li}_{(1-2y)/3}\text{M}^2_y\text{Mn}_{(2-y)/3}]\text{O}_2$ .

4. (cancelled)

5. (original) A cathode composition according to claim 3 wherein  $0.167 < y < 0.5$ .

6. (original) A cathode composition according to claim 3 wherein  $M^2$  is a single metal element.

7. (cancelled)

8. (currently amended) A cathode composition according to claim 1 wherein  $x = (2-2y)/3$  and  $M^1_{(1-x)}$  has the formula  $Li_{(1-y)/3}M^3_y$ , where [[0]] 0.083 < y < 0.5 and  $M^3$  represents one or more metal elements, with the proviso that (i)  $M^3$  includes nickel, (ii)  $M^3$  is a metal element other than chromium, and (iii) when  $M^3$  includes nickel, cobalt, or a combination thereof, all of the nickel has an oxidation state of +2 in air, all of the cobalt has an oxidation state of +3 in air, and all of the manganese has an oxidation state of +4 in air,

said cathode composition having the formula  $Li[Li_{(1-y)/3}M^3_yMn_{(2-2y)/3}]O_2$ .

9. (cancelled)

10. (original) A cathode composition according to claim 8 wherein  $0.167 < y < 0.5$ .

11. (original) A cathode composition according to claim 8 wherein  $M^3$  is a single metal element.

12. (cancelled)

13. (currently amended) A cathode composition according to claim 1 wherein  $x = y$  and  $M^1_{(1-x)}$  has the formula  $M^4_yM^5_{1-2y}$ , where [[0]] 0.083 < y < 0.5, with the proviso that (i)  $M^4$  is a metal element other than chromium, [[and]] (ii)  $M^5$  is a metal element other than chromium that is different from  $M^4$ , [[and]] (iii)  $M^4$  or  $M^5$  includes nickel, and (iv) when  $M^4$ ,  $M^5$ , or both includes nickel, cobalt, or a combination thereof, all of the nickel has an oxidation state of +2 in air, all of the cobalt has an oxidation state of +3 in air, and all of the manganese has an oxidation state of +4 in air,

said cathode composition-having the formula  $Li[M^4_yM^5_{1-2y}Mn_y]O_2$ .

14. (cancelled)

15. (original) A cathode composition according to claim 13 wherein  $0.167 < y < 0.5$ .

16. (original) A cathode composition according to claim 13 wherein  $M^4$  is Ni.

17. (original) A cathode composition according to claim 13 wherein  $M^5$  is Co.

18. (original) A cathode composition according to claim 13 wherein M<sup>4</sup> is Ni and M<sup>5</sup> is Co.
19. (original) A lithium-ion battery comprising:
  - (a) an anode;
  - (b) a cathode according to claims 1, 3, 8, or 13; and
  - (c) an electrolyte separating said anode and said cathode.